

) MESSAGE FROM THE DEPARTMENT HEAD

Dear Members of the MIT Physics Community,

This past year has been a busy, exciting period for both MIT and the Physics Department. Former Provost (and new MIT President) **L. Rafael Reif** launched MITx, an online education platform, which was soon extended in partnership with Harvard to become edX (*edxonline.org*). The Physics Department will be a major player in this arena—we are preparing for the launch of freshman electromagnetism 8.02x in 2013. This spring, MIT physics alumnus and Singapore president **Tony Tan** formally inaugurated the Singapore University of Technology and Design, a collaboration with MIT that involves significant contributions in curriculum development and teacher training from the Physics Department. This summer **Walter Lewin** returned from retirement to give a lecture series to packed lecture halls at MIT, produced by a Japanese public television program. And to end the academic year with a flourish, our faculty, research staff and students helped discover a new particle at the Large Hadron Collider, which may be the long-sought Higgs boson or, even more exciting, may behave differently than expected and thereby lead us to new physics. [1]

While many of these activities have been focused overseas, we and our students have had an extraordinary year at home. Physics undergraduates **P. Bryan Changala** and **Nityan Nair** won national Goldwater Scholarships, **Cameron McCord** won a Truman Scholarship, and **Lauren Kuntz** and **Stephen Serene** won Capital One Academic All-America Track & Field/Cross Country Awards. Physics major **James Karraker** played on MIT's most successful basketball team in its history, which made it to the NCAA Division III semifinals. And one of our star graduates from 1992, **Adam Riess**, won the Nobel Prize in Physics last fall for his co-discovery of the accelerated expansion of the universe. We hope you will enjoy reading the Student Honors & Awards section for a complete listing of our students' achievements.

This past spring, three new assistant professors joined our faculty: astrophysicist **Anna Frebel**, condensed matter theorist **Liang Fu**, and particle experimentalist **Paolo Zuccon**; this fall they were joined by nuclear theorist **Will Detmold** and nuclear experimentalist **Michael Williams**; you can read about them in our New Faculty section. Also this spring, we celebrated the promotion to tenure of **Joseph Formaggio**, **Joshua Winn**, and **Martin Zwierlein**, and thanked retiring faculty members **George Benedek**, **Wit Busza**, **Erich Ippen**, **Roman Jackiw**, and **June Matthews**. Sadly, we mourned the passing of emeriti faculty **George**



Justin Knight Photography

Koster and **Louis Osborne**. During the past year physics faculty received many notable awards, including the Enrico Fermi Award to **Millie Dresselhaus**, and the Sackler Prize to **Sara Seager**. For the full list of honors and awards received by our faculty and staff, turn to the Faculty & Staff Notes section.

This issue profiles research in two exciting areas. On page 38, **Joshua Winn** describes his discoveries about the geometry of other planetary systems, with a focus on “hot Jupiters,” in “Strange New Worlds.” On page 46, soft condensed matter theorist/biophysicist **Jeremy England** gives an elegant introduction to his research with “Life in Translation: the Challenges of Research at the Biophysical Borderline.” And on page 54, I offer a personal essay on diversity and excellence in physics.

Our success is made possible by the efforts of many, including our alumni and friends. We are very grateful to alumnus **Mark Mueller** for his gift establishing a graduate fellowship endowment honoring his mentor and undergraduate advisor, **Arthur Kerman**. An anonymous donor will match up to \$250K all new gifts in support of this fellowship. We hope to reach the \$1M goal and fully endow the fellowship by December 2013, for which we need help. All donors who make a commitment of \$65K or more will become a member of the Patrons of Physics Fellows Society and will enjoy a close partnership with our remarkable students. Please consider supporting the Arthur Kerman Fellowship or one of our other fellowship funds. For more information on supporting the Department, please contact our Director of Development, **Erin McGrath**, at either 617.452.2807 or emcgrath@mit.edu.

Thank you for your interest in, and support of, MIT Physics. I invite you to learn more by visiting our website, web.mit.edu/physics. If travel brings you to Cambridge, please visit us. In the meantime, I welcome your comments to me at physics@mit.edu.

With best regards,

Edmund Bertschinger

Head, Department of Physics

[1] For additional background on MIT’s contributions, see “MIT at the Large Hadron Collider: Illuminating the High-Energy Frontier,” by Markus Klute and Gunther Roland, *physics@mit*, Fall 2010, 40-51.